

William R. Gray
NIBCO, Inc.
P. O. Box 1167
Elkhart, IN 46515-1167

Re: Registered Construction and Operation Status
039-13668-00021

Dear Mr. Gray:

The application from NIBCO, Inc., received on December 27, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1, it has been determined that your emission source, a plumbing products manufacturing plant located at 500 Simpson Avenue, Elkhart, IN 46516-4750, is classified as registered. This emission source consists of the following facilities:

- a. One (1) natural gas-fired curing oven rated at 1.0 MMBtu per hour,
- b. One (1) electric annealing oven,
- c. One (1) maintenance spray booth,
- d. Maintenance welding operations,
- e. Two (2) parts washers, utilizing mineral spirits as the cleaning agent,
- f. Two (2) grinders, two (2) abrasive saws, one (1) sand molding machine, one (1) sand shakeout operation, one (1) core machine, and two (2) electric induction furnaces. Except for one electric induction furnace, particulate emissions are controlled by a baghouse identified as #108.
- g. Two (2) shot blast machines, with particulate emissions controlled by a baghouse identified as #120.

The following conditions shall be applicable:

1. Pursuant to 326 IAC 6-3-2 (Particulate Emissions Limitations), particulate matter (PM) emissions shall be limited by the following equation for process weight rates up to sixty thousand (60,000) pounds per hour:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

For a process weight rate of 1.0 tons per hour, this equation provides an emission limit of 4.10 pounds per hour. The control equipment shall be in operation at all times this emission unit is in operation, in order to comply with this limit.

2. Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:
 - (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9

or fifteen (15) one (1) minute non-overlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

The maintenance spray booth is not subject to 8-2-9 since the volatile organic compound (VOC) emissions are less than 15 pounds per day before controls.

All terms and conditions in any prior permits are no longer in effect. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.1-2(f)(3) or 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

no later than March 1 of each year, with the annual notice being submitted in the format attached.

Any change or modification which may increase the potential pollutant emissions to 25 tons per year or more from the emission source covered in this registration must be approved by the Office of Air Quality (OAQ) before such change may occur. Furthermore, any change or modification which may increase the VOC emissions to 15 pounds per day or more from the maintenance spray booth must be approved by OAQ before such change may occur.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

ARD

cc: File - Elkhart County
Elkhart County Health Department
IDEM - Northern Regional Office
Air Compliance Section Inspector - Greg Wingstrom
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

Registration

This form should be used to comply with the notification requirements under 326 IAC 2-5.1-2(f)(3) or 326 IAC 2-5.5-4(a)(3).

Company Name: NIBCO, Inc.

Address: 500 Simpson Avenue

City: Elkhart, IN 46516-4750

Authorized individual:

Phone #:

Registration #: 039-13668-00021

I hereby certify that NIBCO, Inc. is still in operation and is in compliance with the requirements of Registration 039-13668-00021.

Name (typed):

Title:

Signature:

Date:

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	NIBCO, Inc.
Source Location:	500 Simpson Avenue, Elkhart, IN 46516-4750
County:	Elkhart
SIC Code:	3432
Operation Permit No.:	039-0700-00021
Operation Permit Issuance Date:	January 22, 1992
Revision No.:	039-13668-00021
Permit Reviewer:	Allen R. Davidson

On December 27, 2000, the Office of Air Quality (OAQ) received an application from NIBCO, Inc. relating to the operation of a plumbing products manufacturing plant. This emission source consists of the following facilities:

- a. One (1) natural gas-fired curing oven rated at 1.0 MMBtu per hour,
- b. One (1) electric annealing oven,
- c. One (1) maintenance spray booth,
- d. Maintenance welding operations,
- e. Two (2) parts washers, utilizing mineral spirits as the cleaning agent,
- f. Two (2) grinders, two (2) abrasive saws, one (1) sand molding machine, one (1) sand shakeout operation, one (1) core machine, and two (2) electric induction furnaces. Except for one electric induction furnace, particulate emissions are controlled by a baghouse identified as #108.
- g. Two (2) shot blast machines, with particulate emissions controlled by a baghouse identified as #120.

History

NIBCO, Inc. was issued a construction permit for a plumbing products manufacturing plant on January 22, 1992. An application for a Part 70 permit was received on November 21, 1996. Several emission units were removed from service before a Part 70 permit was issued, rendering the Part 70 rules not applicable. The application was withdrawn on February 20, 1998.

An operation permit renewal application was required by 039-0700-00021 prior to January 1, 2001. However, this application seeks a lower level of approval than an operation permit. For this reason, it is being treated as a new emission source for purposes of this review.

Enforcement Issues

There are no enforcement actions pending against this emission source.

Recommendation

The staff recommends to the Commissioner that the revision be approved as a registration. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on December 27, 2000.

Emission Calculations

See Appendix A of this document for detailed emissions calculations. (5 pages)

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

The following table reflects the new source potential to emit. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit:

Pollutant	Potential To Emit (tons/year)
PM	18.0
PM-10	18.0
SO ₂	0.0
VOC	2.7
CO	0.4
NO _x	0.4

HAP's	Potential To Emit (tons/year)
TOTAL	< 2.7

The potential to emit particulate matter (PM) is less than 25 tons per year, but greater than five tons per year. Therefore, the existing source is classifiable as a registration under 326 IAC 2-5.5.

The potential to emit after controls is as follows:

Pollutant	Potential To Emit (tons/year)
PM	2.1
PM-10	2.1
SO ₂	0.0
VOC	2.7
CO	0.4
NO _x	0.4

HAP's	Potential To Emit (tons/year)
TOTAL	< 2.7

This existing source is not a major source for Prevention of Significant Deterioration, 326 IAC 2-2. No attainment regulated pollutant has the potential to emit at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

County Attainment Status

The source is located in Elkhart County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment (maintenance)
CO	attainment
Lead	attainment

Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Elkhart County has been designated as attainment or unclassifiable for ozone.

Federal Rule Applicability

There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.

There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14 and 40 CFR Part 63) applicable to this source. This source is not subject to the requirements of Subpart T since no halogenated solvents are used.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is not subject to 326 IAC 2-6 (Emission Reporting), because:

- (a) Although it is located in Elkhart County, it does not have the potential to emit more than ten (10) tons per year of volatile organic compounds or nitrogen oxides.
- (b) It does not have the potential to emit more than one hundred (100) tons per year of any other pollutant specified in the rule.

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Maintenance Spray Booth

326 IAC 8-2-9 (Miscellaneous Metal Coating Operations)

This facility is not subject to 326 IAC 8-2-9. Pursuant to 326 IAC 8-2-1 (Applicability), the rule is not applicable since the volatile organic compound (VOC) emissions are less than 15 pounds per day before controls.

State Rule Applicability - Machining, Welding, and Abrasive Shot Blast Operations

326 IAC 6-3-2 (Particulate Emissions Limitations)

These facilities are subject to 326 IAC 6-3-2. Pursuant to 326 IAC 6-3-2 (Particulate Emissions Limitations), particulate matter (PM) emissions shall be limited by the following equation for process weight rates up to sixty thousand (60,000) pounds per hour:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

For a process weight rate of 1.0 ton per hour, this equation provides an emission limit of 4.10 pounds per hour. The control equipment shall be in operation at all times when a facility that it controls is in operation, in order to comply with this limit.

State Rule Applicability - Ovens

There are no state rules applicable to these facilities.

State Rule Applicability - Parts Washing Operations

326 IAC 8-3 (Organic Solvent Degreasing Operations)

These facilities are not subject to 326 IAC 8-3 (Organic Solvent Degreasing Operations) because they do not utilize organic solvents.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as hazardous air pollutants on the Office of Air Quality (OAQ) Part 70 Application Form GSD-08.

This revision will emit levels of hazardous air pollutants less than those which constitute a major source according to Section 112 of the 1990 Clean Air Act Amendments.

Conclusion

The operation of these facilities shall be subject to the conditions of the attached registration, 039-13668-00021.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Page 1 TSD App A

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

1.0

8.8

Pollutant

	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.0	0.0	0.0	0.4	0.0	0.4

*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Page 2 TSD App A

HAPs Emissions

Company Name: NIBCO, Inc.

Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750

ID: 039-13668-00021

Reviewer: Allen R. Davidson

Date: 01/08/01

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	9.198E-06	5.256E-06	3.285E-04	7.884E-03	1.489E-05

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	2.190E-06	4.818E-06	6.132E-06	1.664E-06	9.198E-06

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Page 2 TSD App A

HAPs Emissions

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

HAPs - Organics

	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
	9.198E-06	5.256E-06	3.285E-04	7.884E-03	1.489E-05

HAPs - Metals

	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
factors are provided above. P-42, Chapter 1.4.	2.190E-06	4.818E-06	6.132E-06	1.664E-06	9.198E-06

Appendix A: Emission Calculations
Abrasive Blasting - Confined

Page 3 TSD App A

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

Table 1 - Emission Factors for Abrasives

Abrasive	Emission Factor	
	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al Oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

Internal diameter, in	Nozzle Pressure (psig)							
	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)
FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =

D = Density of abrasive (lb/ft³) From Table 2 =
D1 = Density of sand (lb/ft³) =
ID = Actual nozzle internal diameter (in) =
ID1 = Nozzle internal diameter (in) from Table 3 =

487
99
0.25
0.25

Flow Rate (FR) (lb/hr) = 1087.141 per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =
FR = Flow Rate (lb/hr) =
w = fraction of time of wet blasting =
N = number of nozzles =

0.004
1087.141
0
1

%

Uncontrolled Emissions =	4.35 lb/hr
	19.05 ton/yr

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)

Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs

Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)² x (D/D1)

E = EF x FR x (1-w/200) x N

w should be entered in as a whole number (if w is 50%, enter 50)

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Page 2 TSD App A

HAPs Emissions

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

HAPs - Organics

	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
	9.198E-06	5.256E-06	3.285E-04	7.884E-03	1.489E-05

HAPs - Metals

	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
factors are provided above. P-42, Chapter 1.4.	2.190E-06	4.818E-06	6.132E-06	1.664E-06	9.198E-06

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	NIBCO, Inc.
Source Location:	500 Simpson Avenue, Elkhart, IN 46516-4750
County:	Elkhart
SIC Code:	3432
Operation Permit No.:	039-0700-00021
Operation Permit Issuance Date:	January 22, 1992
Revision No.:	039-13668-00021
Permit Reviewer:	Allen R. Davidson

On December 27, 2000, the Office of Air Quality (OAQ) received an application from NIBCO, Inc. relating to the operation of a plumbing products manufacturing plant. This emission source consists of the following facilities:

- a. One (1) natural gas-fired curing oven rated at 1.0 MMBtu per hour,
- b. One (1) electric annealing oven,
- c. One (1) maintenance spray booth,
- d. Maintenance welding operations,
- e. Two (2) parts washers, utilizing mineral spirits as the cleaning agent,
- f. Two (2) grinders, two (2) abrasive saws, one (1) sand molding machine, one (1) sand shakeout operation, one (1) core machine, and two (2) electric induction furnaces. Except for one electric induction furnace, particulate emissions are controlled by a baghouse identified as #108.
- g. Two (2) shot blast machines, with particulate emissions controlled by a baghouse identified as #120.

History

NIBCO, Inc. was issued a construction permit for a plumbing products manufacturing plant on January 22, 1992. An application for a Part 70 permit was received on November 21, 1996. Several emission units were removed from service before a Part 70 permit was issued, rendering the Part 70 rules not applicable. The application was withdrawn on February 20, 1998.

An operation permit renewal application was required by 039-0700-00021 prior to January 1, 2001. However, this application seeks a lower level of approval than an operation permit. For this reason, it is being treated as a new emission source for purposes of this review.

Enforcement Issues

There are no enforcement actions pending against this emission source.

Recommendation

The staff recommends to the Commissioner that the revision be approved as a registration. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on December 27, 2000.

Emission Calculations

See Appendix A of this document for detailed emissions calculations. (5 pages)

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

The following table reflects the new source potential to emit. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit:

Pollutant	Potential To Emit (tons/year)
PM	18.0
PM-10	18.0
SO ₂	0.0
VOC	2.7
CO	0.4
NO _x	0.4

HAP's	Potential To Emit (tons/year)
TOTAL	< 2.7

The potential to emit particulate matter (PM) is less than 25 tons per year, but greater than five tons per year. Therefore, the existing source is classifiable as a registration under 326 IAC 2-5.5.

The potential to emit after controls is as follows:

Pollutant	Potential To Emit (tons/year)
PM	2.1
PM-10	2.1
SO ₂	0.0
VOC	2.7
CO	0.4
NO _x	0.4

HAP's	Potential To Emit (tons/year)
TOTAL	< 2.7

This existing source is not a major source for Prevention of Significant Deterioration, 326 IAC 2-2. No attainment regulated pollutant has the potential to emit at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

County Attainment Status

The source is located in Elkhart County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment (maintenance)
CO	attainment
Lead	attainment

Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Elkhart County has been designated as attainment or unclassifiable for ozone.

Federal Rule Applicability

There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.

There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14 and 40 CFR Part 63) applicable to this source. This source is not subject to the requirements of Subpart T since no halogenated solvents are used.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is not subject to 326 IAC 2-6 (Emission Reporting), because:

- (a) Although it is located in Elkhart County, it does not have the potential to emit more than ten (10) tons per year of volatile organic compounds or nitrogen oxides.
- (b) It does not have the potential to emit more than one hundred (100) tons per year of any other pollutant specified in the rule.

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Maintenance Spray Booth

326 IAC 8-2-9 (Miscellaneous Metal Coating Operations)

This facility is not subject to 326 IAC 8-2-9. Pursuant to 326 IAC 8-2-1 (Applicability), the rule is not applicable since the volatile organic compound (VOC) emissions are less than 15 pounds per day before controls.

State Rule Applicability - Machining, Welding, and Abrasive Shot Blast Operations

326 IAC 6-3-2 (Particulate Emissions Limitations)

These facilities are subject to 326 IAC 6-3-2. Pursuant to 326 IAC 6-3-2 (Particulate Emissions Limitations), particulate matter (PM) emissions shall be limited by the following equation for process weight rates up to sixty thousand (60,000) pounds per hour:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

For a process weight rate of 1.0 ton per hour, this equation provides an emission limit of 4.10 pounds per hour. The control equipment shall be in operation at all times when a facility that it controls is in operation, in order to comply with this limit.

State Rule Applicability - Ovens

There are no state rules applicable to these facilities.

State Rule Applicability - Parts Washing Operations

326 IAC 8-3 (Organic Solvent Degreasing Operations)

These facilities are not subject to 326 IAC 8-3 (Organic Solvent Degreasing Operations) because they do not utilize organic solvents.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as hazardous air pollutants on the Office of Air Quality (OAQ) Part 70 Application Form GSD-08.

This revision will emit levels of hazardous air pollutants less than those which constitute a major source according to Section 112 of the 1990 Clean Air Act Amendments.

Conclusion

The operation of these facilities shall be subject to the conditions of the attached registration, 039-13668-00021.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Page 1 TSD App A

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

1.0

8.8

Pollutant

	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.0	0.0	0.0	0.4	0.0	0.4

*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Page 2 TSD App A

HAPs Emissions

Company Name: NIBCO, Inc.

Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750

ID: 039-13668-00021

Reviewer: Allen R. Davidson

Date: 01/08/01

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	9.198E-06	5.256E-06	3.285E-04	7.884E-03	1.489E-05

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	2.190E-06	4.818E-06	6.132E-06	1.664E-06	9.198E-06

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Appendix A: Emission Calculations
Abrasive Blasting - Confined**

Page 3 TSD App A

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

Table 1 - Emission Factors for Abrasives

Abrasive	Emission Factor	
	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al Oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

Internal diameter, in	Nozzle Pressure (psig)							
	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)
FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =

D = Density of abrasive (lb/ft³) From Table 2 =
D1 = Density of sand (lb/ft³) =
ID = Actual nozzle internal diameter (in) =
ID1 = Nozzle internal diameter (in) from Table 3 =

487
99
0.25
0.25

Flow Rate (FR) (lb/hr) = 1087.141 per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =
FR = Flow Rate (lb/hr) =
w = fraction of time of wet blasting =
N = number of nozzles =

0.004
1087.141
0 %
1

Uncontrolled Emissions =	4.35 lb/hr
	19.05 ton/yr

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)

Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs

Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)² x (D/D1)

E = EF x FR x (1-w/200) x N

w should be entered in as a whole number (if w is 50%, enter 50)

Appendix A: Emissions Calculations

Page 5 TSD App A

Company Name: NIBCO, Inc.
Address City IN Zip: 500 Simpson Avenue, Elkhart, IN 46516-4750
ID: 039-13668-00021
Reviewer: Allen R. Davidson
Date: 01/08/01

The following calculations determine emissions after controls:

$$\frac{4000 \text{ cu ft.} * 0.03 \text{ grain} * \text{lb} * 60 \text{ min}}{\text{min} \text{ cu.ft} 7000 \text{ grain} \text{ hr}} = 1.0286 \text{ ton/yr}$$

Since there are two baghouses, the amount is double: 2.0571 ton/yr

The following calculations determine compliance with 326 IAC 6-3-2:

$$E = 4.1 * (1 ^ {0.67}) = 4.10 \text{ lb/hr}$$

$$4.10 \text{ lb/hr} * 8760 \text{ hr/yr} / 2000 \text{ lb/ton} = 17.96 \text{ ton/yr}$$

The control devices must be used in order to comply with this limit.

The following calculation estimates VOC emissions from the maintenance spray booth:

$$\frac{14.9 \text{ lb} * 365 \text{ day} * \text{ton}}{\text{day} \text{ yr} 2000 \text{ lb}} = 2.7193 \text{ ton/yr}$$